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Karim et al.

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(54) **HIGH PRODUCTIVITY CATALYST FOR
ALKANE OXIDATION TO UNSATURATED
CARBOXYLIC ACIDS AND ALKENES**

(58) **Field of Classification Search**

None

See application file for complete search history.

(71) Applicant: **SAUDI BASIC INDUSTRIES
CORPORATION**, Riyadh (SA)

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Primary Examiner — Colin W Slifka

(74) *Attorney, Agent, or Firm* — Ballard Spahr LLP

(57)

ABSTRACT

The present disclosures and inventions relate to composite catalyst compositions for the catalytic oxidation of hydrocarbons such as propane with an oxygen containing stream, in the presence of a composite catalyst comprising CA that comprises at least components a metal M, a support S, and an optional alkali metal A, and also CB that comprises one or more mixed metal oxide phases comprising metals in the relative molar ratios indicated by the formula $Mo_aV_bGa_cPd_dNb_eX_f$ to produce α,β -unsaturated carboxylic acids such as acrylic acid and/or olefins such as propylene.

19 Claims, 2 Drawing Sheets

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

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(52) **U.S. Cl.**

CPC **B01J 27/0576** (2013.01); **B01J 23/6527** (2013.01); **B01J 23/6562** (2013.01);

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